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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/592,023

08/21/2007

Stewart John Hamish Bell

AAT-109US

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RATNERPRESTIA

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VALLEY FORGE, PA 19482

EXAMINER

NGUYEN, LEON VIET Q

ART UNIT

PAPER NUMBER

2611

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/592,023	<b>Applicant(s)</b> BELL ET AL.	
	<b>Examiner</b> LEON-VIET Q. NGUYEN	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/7/06</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement (IDS) submitted on 9/7/06 was filed after the mailing date of 9/7/06. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Drawings***

3. The drawings are objected to under 37 CFR 1.84(o). Drawings submitted to the office must be suitable descriptive legends may be used subject to approval by the office, or may be required by the examiner where necessary for understanding of the drawings. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New

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Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Figures 1 and 2 are objected to because all diagrammatic blocks are required to be labeled to indicate contents or function. See 37 CFR 1.83 (a).

Figures 1 and 2 should also be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant’s admitted prior art (hereby referred to as AAPA) in view of Hofman et al**

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**(“Digital Radio Mondiale (DRM) digital sound broadcasting in the AM bands”, IEEE Transactions on Broadcasting, Sept. 2003 Vol. 49 Issue 3, pages 319-328).**

Re claim 1, AAPA teaches a method of processing received radio signals in a receiver operating according to the DRM standard (fig. 1, page 2 line 7), in which the signals are converted to the receiver's baseband frequency (downconverter 2 in fig. 1, page 2 lines 7-8), sampled (A/D converter 3 in fig. 1, sampling is a well-known function of A/D converters) and then subject to Fourier transformation (FFT 7 in fig. 1) to resolve QAM constellation points (page 3 lines 13-17).

AAPA fails to teach wherein for transmission modes in which the number of carriers is not a power of 2, the sample rate of the signal on which the Fourier transform is performed is power-of-two multiple of the desired frequency spacing in the transform output and the Fourier transformation is a power-of-two fast Fourier Transformation. However Hofman teaches wherein for transmission modes in which the number of carriers is not a power of 2 (Mode B in Table II, 206 used carriers is not a power of 2), the sample rate of the signal (page 322 right side first paragraph, sampling time  $t_s$ ) on which the Fourier transform is performed is power-of-two multiple of the desired frequency spacing in the transform output (page 322 right side first paragraph,  $\Delta F$  is the frequency spacing and it would be obvious to set  $N$  to 2) and the Fourier transformation is a power-of-two fast Fourier Transformation (page 322 right side third paragraph).

Therefore taking the combined teachings of AAPA and Hofman as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the steps of Hofman into the method of AAPA. The motivation to

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combine Hofman and AAPA would be to provide better sound quality and more reliable reception (abstract of Hofman).

Re claim 2, the modified invention of AAPA teaches a method in which the signals are sampled at a first rate (page 322 right side first paragraph of Hofman), interpolated to a higher sampling rate (page 325 left side first paragraph of Hofman), subject to the Fast Fourier transformation (FFT 7 in fig. 1 of AAPA) and then decimated to remove unwanted frequency bins (MLC decoder 10 in fig. 1 of AAPA).

Re claim 3, the modified invention of AAPA teaches a method in which the sample rate is obtained from a desired number of carriers (page 322 right side first paragraph of Hofman, N), rounded up to a nearest higher power of two and multiplied by the desired frequency spacing (page 322 right side first paragraph of Hofman).

Re claim 4, the modified invention of AAP teaches a method for processing signals having a variety of numbers of carriers (table 1 of AAPA, the carriers corresponding to the various modes) having respective desired frequency spacings (table 1 of AAPA), in which the signals are sampled or interpolated to produce a digital signal (A/D converter 3 in fig. 1 of AAPA) for Fourier transformation (FFT 7 in fig. 1 of AAPA) and in which the sample rate of the digital signal is a multiple of different ones of the desired frequency spacings of the carriers (page 325 left side first paragraph of Hofman).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEON-VIET Q. NGUYEN whose telephone number is (571)270-1185. The examiner can normally be reached on Monday-Friday, alternate Friday off, 7:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon-Viet Q Nguyen/  
Examiner, Art Unit 2611

/Chieh M Fan/  
Supervisory Patent Examiner, Art Unit 2611